ZOOLOGY.—*Nematosis of a grass of the genus* Cyanodon *caused by a new nema of the genus* Tylenchus *Bast.*[1] N. A. COBB, Bureau of Plant Industry.

Tylenchus[2] *tumefaciens* n. sp. $\frac{0.8}{1.2}\cdots\frac{5.6}{2.6}\cdots\frac{?}{?}\cdots{}^{80'}\frac{88.4}{4.5}\cdots\frac{96.8}{1.9}\ 1.4\text{mm}$ The posterior swelling of the oesophagus in this species seems to be somewhat set off from the intestine. The *reflexed portion of the ovary* contains the ova in about three ranges or rows, and appears one-third as wide as the corresponding portion of the body, and *has a length about twice as great as that of the neck.* At the blind end of the ovary there is a special single cell, taking up the full width, and having a distinct, clear, spherical nucleus, nearly one-third as wide as the cell. The nucleus contains a fairly granular spherical nucleolus half as wide as the nucleus itself. The immediately adjacent ova differ in having larger granular nuclei with somewhat larger but similar nucleoli. In this reflexed portion of the ovary the ova as they pass cephalad increase slightly in size, but do not exhibit much detail in structure. Passing around the flexure, the ova slowly begin to change in structure, and by the time they are opposite the blind end of the ovary, the nuclei begin to show chromosomes.

The large transverse *vulva spans the ventral fourth,* or even the third of the body, and is so massive that sometimes the *part of the body behind is bent dorsad at an obtuse angle.* The acute tail is nearly straight, slightly convex-conoid; it may be even slightly dorsally arcuate. *Anus inconspicuous. The massive uterus,* occupying most of the corresponding body cavity, *usually contains but one egg.* The spherical spermatozoa, packed in the uterus so as to be more or less polyhedral, are about one-fourth as wide as the body of the female; they are finally granular

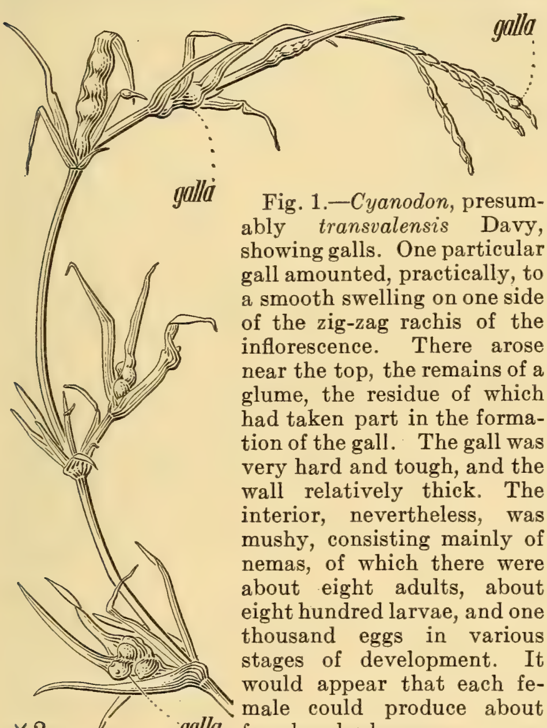

Fig. 1.—*Cyanodon,* presumably *transvalensis* Davy, showing galls. One particular gall amounted, practically, to a smooth swelling on one side of the zig-zag rachis of the inflorescence. There arose near the top, the remains of a glume, the residue of which had taken part in the formation of the gall. The gall was very hard and tough, and the wall relatively thick. The interior, nevertheless, was mushy, consisting mainly of nemas, of which there were about eight adults, about eight hundred larvae, and one thousand eggs in various stages of development. It would appear that each female could produce about four hundred eggs.

---

[1] Received April 1, 1932.

[2] The genus name *Tylenchus* is used here instead of a recently discovered prior synonym because of the author's confidence that if and when the attention of the International Commission on Zoological Nomenclature is called to the matter it will decide that far greater confusion and inconvenience will be caused by following the rule of priority in this case than in not following it, and will abrogate the rule, as it has power to do in such cases.

and contain a nucleus half as wide as themselves, which is more granular, and which contains a distinct, highly refractive, spherical, structureless-looking nucleolus about one-third to one-fourth as wide as the nucleus itself. Notwithstanding the size of the sperms, a fertilized female may contain hundreds of them. The matured ova are rather coarsely granular, are pressed one against another in the ovary and sometimes appear wider than they are long, and in some parts apparently are packed more densely than double file. *At the vulva the body of the female suddenly diminishes* in diameter, so that in passing one-half body length caudad the diameter diminishes fifty per cent.

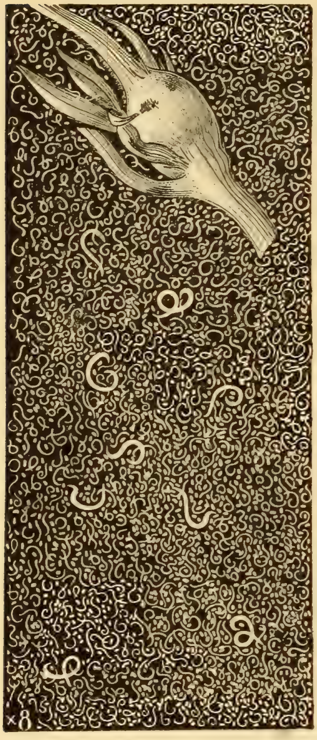

Fig. 2.—A gall from the tissues of the base of a leaf sheath. A portion of the sheath tissue pulled away nearly intact. The inner tissues of the sheath had produced the wall of the tumor. The mushy interior was very distinct from the wall, and occupied a distinct cavity, in which the nemas lay loose, free to move about. The nine adult nemas and the numerous eggs and larvae shown were taken from another gall of *the same size*. Thus the picture shows a gall and a corresponding nemic population.

The transverse striae of the cuticle, measured just behind the vulva, are one micron apart.

The inconspicuous, posterior, bulbous half of the spear, which accords with conditions found in some other species of *Tylenchus*, suggests that published illustrations and descriptions of a considerable number of Tylenchi may ultimately have to be revised for the reason that the more obvious anterior half of the spear has been inadvertently described as if it were the entire organ. Sometimes the posterior portion of the onchium of a Triplonch may, even in life, be very inconspicuous and become nearly invisible when mounted in glycerine or glycerine jelly,—still more so in balsam. Under such deceptive conditions the real length of the spear is sometimes indicated by the length of the contractile fibers passing from the labial framework to the tribulbous base of the spear, as in the present case. See Fig. 3.

$$\frac{0.8}{1.1}\cdots\cdots\frac{5.3}{2.0/}\cdots\cdots\frac{(?)11.}{(?)2.6}\cdots\cdots\frac{\underset{\frown}{80}\mathrm{M}}{3.2}\cdots\cdots\frac{94.}{2.6}\,1.2\,\mathrm{mm}$$

The vas deferens and ejaculatory duct occupy the greater portion of the body cavity toward the posterior extremity of the male. The testis is strongly developed and at its *bent blind end* is slightly expanded, measuring there about one-half the corresponding body diameter. At first the primary spermatocytes contain large subspherical nuclei with distinct nucleoli, the nuclei being one-fifth to one-sixth as wide as the corresponding portion of the body.

Habitat: Found in small galls on the above-ground parts of the grass *Cyanodon sp.*?,—presumably *C. transvalensis.* (*Fide* A. S. Hitchcock). The plants are killed by the parasite, the grass dying off in patches. Sent by Dr. Potgetier, from Pretoria, South Africa.

Diagnosis. **Tylenchus tumefaciens** n. sp. *Tylenchus* Bastian, formed and dimensioned as indicated in the formulae, illustrations and italicized text.

This nematosis[3] has recently come to notice in a number of Bradley grass lawns in Johannesburg and Pretoria. It seems probable that it occurs widely. Usually it is first noticed in small patches. A close examination of a diseased plant discloses greenish or reddish lumps up to the size of a canary seed, occurring on the stems and leaves,—less often in the inflorescence. Breaking these tiny galls, one discovers with a magnifying glass that the interior of the gall is inhabited by nemas, the cause of the disease. An infestation of one Pretoria lawn was traced to another lawn, from which some planting grass had been taken.

The tiny galls, or tumors, on the grass are so inconspicuous that they might easily escape notice and the disease be unwittingly spread. Once present, the disease accumulates, and after a year or more, patches of ailing grass become apparent. The pest is believed to have been present in Pretoria for some years. The abandonment of one variety of lawn grass[4] is probably due to this disease.

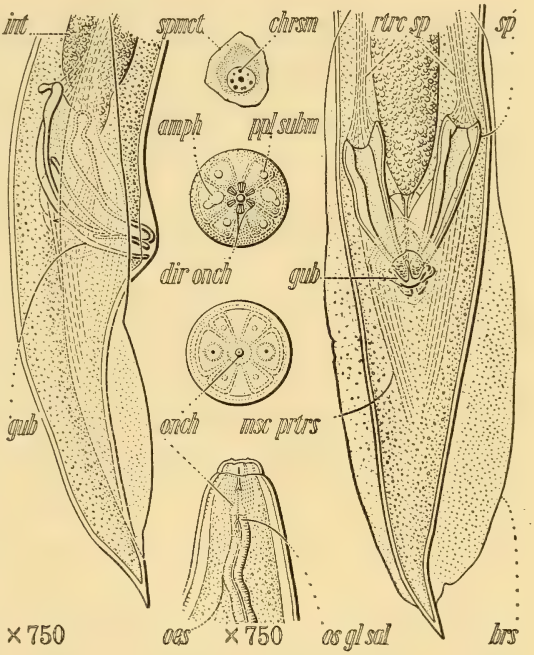

Fig. 3.—Lateral and ventral views of the tail end of the same male specimen of *Tylenchus tumefaciens* n. sp. Below, head of the same, dorsal view. The upper small figure is of a spermatocyte whose nucleus shows chromosomes. Of the two middle figures, the upper is a front view of the head, showing the four submedian papillae and the two duplex amphids, while immediately below is an optical section at the base of the lip region, each magnified about fifteen hundred diameters.

Precautions. 1. Prompt burning off of diseased patches after spraying with inflammable liquid,—i.e. kill the tops, not the roots. 2. Avoidance of seed and cuttings from infested areas. 3. Unusually careful inspection of grass cuttings used as sets. 4. Recleaning of suspected grass seed.

[3] Abstract from *South African Gardening and Country Life* **15**, Jan., 1925.

[4] Variety "Red Quick Grass," presumably a species of *Cyanodon*. N. A. C.